Missions for America
Semper vigilans!
Semper volans!

The Coastwatcher

Publication of the Thames River Composite Squadron
Connecticut Wing
Civil Air Patrol

300 Tower Rd., Groton, CT
http://ct075.org.

LtCol Stephen Rocketto, Editor
srocketto@aquilasys.com

C/MSgt Virginia Poe, Reporter
C/SrA Michael Hollingsworth, Printer's Devil
Lt David Meers & Maj Roy Bourque, Papparazis

Vol. VIII, No. 33 17 September, 2014

SCHEDULE OF COMING EVENT

20 SEP-Cadet Ball-USCGA
23 SEP-TRCS Meeting
30 SEP-TRCS Meeting
01 OCT-CTWG Commander's Call and CAC
17-19 OCT-CTWG/NER Conference
16-18 OCT-NER AEO Course at Conference
18-25 OCT-NER Staff College-New Jersey

CADET MEETING NOTES

16 September, 2014
by
C/MSgt Virginia Poe

Cadets drilled in the field at the squadron site. The flight sergeants administered drill tests, and in-flights were given the opportunity to command the flight in drill.

The new color guard performed a flag raising ceremony and, at the conclusion of the meeting, a retreat.

C/1stLt Tynan presented an emergency services lesson on proper use of radios to carry out the CAP missions.

C/CMSgt Carter taught a safety lesson on the dangers of alcohol and the damaging effects of drinking on the body.

SENIOR MEETING NOTES

16 September, 2014

The meeting was devoted to completing the subordinate unit inspection documentation.

VALENTI CAR-TRUCK-MOTORCYCLE JAMBOREE

30 August, 2014

SM Barbara Zimmermann and SM Susan Poe coordinated the Squadron participation at the Bob Valenti Auto Mall in Mystic. TRCS presented an information booth and answered questions about CAP during the exhibit. Several of our members were interview on radio station 102.3. Proceeds were donated to support our activities.

Cadet John Meers, Daniel Hollingsworth, Michael Hollingsworth, Matthew Johnstone, Grace Poe, and Brendan Shultz supported the event.

CTWG RIFLE-PRELIMINARY RESULTS

The two day CTWG Rifle Safety and Marksmanship Program was held on 30 October and 13 September. Seven squadrons and 48 cadets participated. Preliminary results placed Thames River's three man team in first place with a score of 559 out of a possible 600. Silver City holds second place accumulating 548 points and the New Haven Minutemen placed third with a score of 538.

The firing line on the second day of the event. Cadets D. Hollingsworth and J. Meers are in the foreground.

The Thames River Team consisted of C/TSgt Michael Hollingsworth tied with two other shooters for second place individual honors, with a score of 191 out of a possible 200, C/TSgt David Hollingsworth who also tied with two others in third place firing a 188, and C/SMSgt John Meers whose 180 tied him with two other shooters for fourth place.

Cadet Michael Hollingsworth in the prone position.

AEROSPACE CURRENT EVENTS
AEROSPACE HISTORY

Piston Engine Aircraft Fuels

When the Coastwatcher editor first started flying, four different grades of aviation gasoline were available: 80/87 (colored red), 91/96 (brown), 100/130 (green), and 115/145 (purple). The lower number indicated the octane rating at a lean setting and the higher number was the rating when running rich.

General aviation used 80/87 which has been replaced by 100LL. The 91/96 grade may have been mostly for military aircraft. 100/130 was for higher compression engines and 115/145 was used in the big supercharged radials such as the Pratt & Whitney R-2800. With the exception of 100LL, almost all of the other grades are no longer produced or only found under special circumstance. Some special blends are available for smaller engines.

The environmental movement is eager to make any leaded gasoline an extinct species. This poses a problem for general aviation pistol fleet since a replacement would need to be found.

Diesel engines have been used in aircraft since the 1920s but for many technical reasons have never become popular. A Stinson SM-1B Detroiter flew with a Packard diesel in 1928. Recently, Cessna has made and end run around the gasoline issue by offering a Turbo 182 which runs on Jet A.

The first diesel powered airplane now resides in the Golden Wings Museum in Anoka, Minnesota.

Currently, the Federal Aviation Administration is testing four blends of unleaded aviation gasoline at the Hughes Technical Center in Atlantic City. Three companies, Shell, TOTAL, and Swift Fuels have submitted proposals in a program which expects to issue a report in three to four years.

The criteria which will be used will be production and distribution infrastructure, environmental impact, operating cost, and the impact on the existing fleet of piston engine aircraft.

SHORT CATAPULTS AND ZERO LENGTH LAUNCHERS

By
Stephen M. Rocketto

Part II

From The Battle of the Atlantic to the Cold War's Zero Length Launcher Experiments

Early in World War II, the British faced a particular problem in convoy protection. The unglamorous battle of the Atlantic, the struggle to keep the supply lines open to Great Britain, was being lost as the Nazi submarines took a heavy toll of allied shipping. Part of the success of the *Kriegsmarine* was due to their employment of long range reconnaissance aircraft, notably the Focke-Wulf Fw 200 Condor operating from French and Norwegian bases.

The Condor, designed and first test flown by the noted designer Kurt Tank, was an adaption of a civilian airliners sometimes called the *Kourier*. The prototype was the first four engine aircraft to fly non-stop from Berlin to New York, a 24 hour flight which took place in August of 1938. A Condor was also the first German aircraft shot down by USAAF pilots when one was destroyed in August of 1942 by a P-40 and a P-38 over Iceland.

Merchant seaman's view of Fw 200C ventral gondola housing the bombardier and cannon.

(Credit Budesarchiv Bild)

At first, the Condor was used to attack the lightly armed merchant ships and were so effective that Churchill called the the"Scourge of the Atlantic." They would sortie from French bases and range as far as 1,500 west of Ireland, flying low so as to enhance their changes to see merchantmen silhouetted against the horizon. Before they were equipped with accurate bombsights, the Condors would make head-on attacks from 150 feet dropping four 250 kg bombs in succession while strafing the target with its forward firing 20 mm cannon and rifle caliber machine guns.

The German deployment of Condors was hampered by two weaknesses, one logistical and one technical. The logistical weakness was the short supply of aircraft caused by a lack of strategic insight and a low production rate. The technical weakness was a result of the civilian origins of the aircraft. Its wings and fuselage was not designed for the stress and strain of combat and severe structural damage was common.

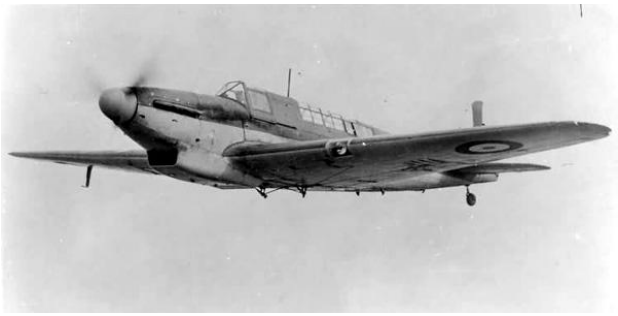
The Condors also stalked allied convoys and radioed their location, course, and speed to the headquarters which then dispatched deployed U-boats to attack the convoys. When the Condors shadowed a convoy, the stayed beyond the range of the anti-aircraft guns and were immune from interference. The obvious solution was to provide aircraft protection but how?

No large aircraft carriers were available and the construction of escort aircraft carriers and merchant aircraft carriers were started. Escort carriers were small, slow vessels designed to serve as a substitute for the fleet aircraft carriers which were assigned to the main battle fleets. The U. S. Navy designated them as CVEs which stood for "carrier, heavier than air, escort"but slow speed and lack of armor led some wag to label them as"combustible, vulnerable, expendable." Merchant Aircraft Carriers (MAC) were tankers or bulk carriers whose flat decks allowed the installation of a rudimentary flight deck with minimal aircraft handling capabilities. But until these vessels were produced in abundance, the Fighter Catapult Ship (FCS) and Catapult Aircraft Merchant (CAM) ship were all that were available.

The Fighter Catapult Ships were a stop-gap measure created to quickly deploy convoy escorts. Five ex-merchant ships were equipped with

catapults and up to three Fairey Fulmars or Hawker Hurricanes modified for a catapult launch. The Fulmars were soon abandoned as too slow to intercept the German attackers. These ships were commissioned warships with Royal Navy crews, relatively heavily armed, and flew the white ensign of the Royal Navy. They carried no cargo and accompanied convoys on the Gibraltar convoys which were heavily attacked from bases in France.

FCS HMS Springbank carrying its Fulmar on a cordite powered catapult abaft the funnel and displaying four 4 inch guns. *(Credit: Rick Cox Collection)*



Fairey Fulmar Mk.1 *(Credit Crown Copyright PD)*

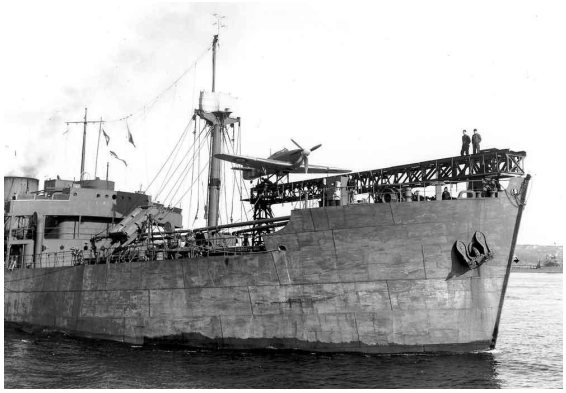
CAM ships were normal cargo vessels supplied with a 75 foot long catapult on the foredeck and a modified Hawker Hurricane Mk.1A fighter, nicknamed a "Hurricat," might have a small deck gun and some automatic weapons manned by soldiers or matelots seconded to the civilian crew, flew the red ensign of the British merchant marine and carried cargo. They entered service about six months after the first FCS.

Hawker Sea Hurricane now in the Shuttleworth Collection *(Credit Siteseen, Ltd.)*

The development of the catapult techniques was under the direction of a World War I fighter pilot, Louis Strange. During that war, Strange had once fallen from his aircraft when it inverted and his safety harness broke while he was trying to change the ammunition drum on his Lewis gun. He managed to hold onto the drum, and in his own works:

> *kept on kicking upwards behind me until at last I got one foot and then the other hooked inside the cockpit. Somehow I got the stick between my legs again, and jammed on full aileron and elevator; I do not know exactly what happened then, but the trick was done. The machine came over the right way up, and I fell off the top plane and into my seat with a bump.*

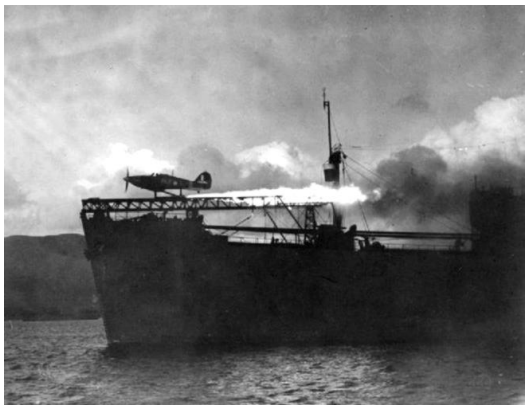
Mechanically adept, Strange developed a number of useful improvements for warplanes. When World War II started, Strange set up the RAF parachute school and then took charge of the catapult development, testing it for the first time at the age of 49.



Starboard bow view of CAM ship with Hurricane on catapult.

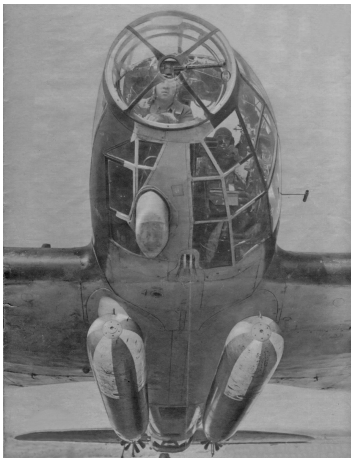
A small Royal Air Force (RAF) or Fleet Air Arm (FAA) contingent, pilot, and four technicians flew and serviced the aircraft and the FAA supplied a Fighter Direction Officer who could guide the Hurricat to its target using radar. The power to launch the Hurricat was supplied by rockets. A cluster of solid fuel three inch rockets were mounted on a sled to which the aircraft was attached. Acceleration was about one and a half times greater than that experiences with the catapults normally used.

There were a number of operational problems. Since the launch was a one-shot opportunity, serious thought had to be given to whether or not it was worthwhile. The aircraft could be damaged on launch and the blast from the rockets alerted the shadower which would withdraw out of range. Finally, the pilot had two options when his fuel was exhausted: bail-out or ditch and wait to be picked up by one of the ships in the convoy.



Hurricat on its way. *(Credit: Imperial War Museum)*

About three dozen ships were modified as CAM ships and about 12 of them were sunk in actions. The CAM ships were generally employed as convoy escorts on the Atlantic runs to Canada and the Barents Sea voyages to Murmansk and Archangel in the Soviet Union. The Russian runs placed the convoys in range of the Luftwaffe bases in Norway and devastating attacks by Ju 88 torpedo bombers and He 111s were frequent.



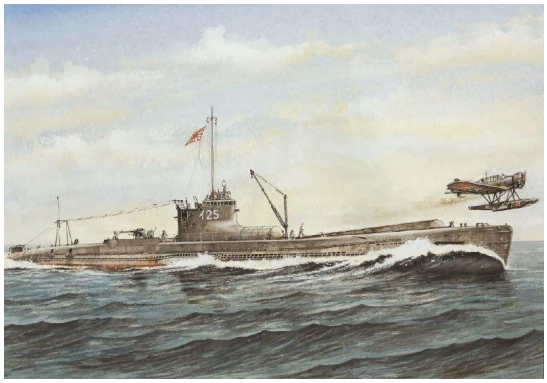
Business end of a Heinkel 111 displaying the two torpedo payload.

Convoys sailed in columns of ships. A forty ship convoy might have eight columns of five ships each. The Germans used a torpedo attack tactic which they called *die Goldene Zange* (Golden Comb). A large force, perhaps 20 or 30 aircraft, each carrying two torpedoes, would fly a close line abreast formation and attack on one quarter of the convoy. They would release their torpedoes at relatively close range. Torpedoes which missed the outer column would have a chance of striking one of the ships in the inner columns. The convoys best option was to turn into the attack and parallel the torpedo tracks, offering smaller targets, but the cumbersome formation and the surprise of the attack most often made this response nugatory.

A total of nine combat launches by FCS and CAM ships occurred during the two years operations, 1941-43, and eight German aircraft were destroyed which included four *Condors*, four Heinkel Heinkel 111s, and one Junkers Ju 88. Other German aircraft had their attacks broken up or were driven away. One Hurricat pilot was lost when he drowned after bailing out.

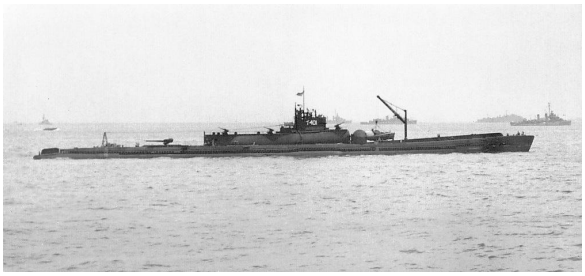
A number of militaries also modified submarines with aircraft catapults and hangars., the Japanese being foremost with over 40 vessels so equipped. Two bear special mention. The I-25 and her Yokosuka E14Y Glen float plane carried out the

only aerial bombardment of the U.S. Mainland during World War II. On September 9th, 1942, Warrant Officer Nubuo Fujita launched from the I-25 with a load of incendiary bombs and dropped two of them near Brookings, Oregon in an attempt to start a forest fire. Little damage was incurred. This was the only bombing of the mainland United States by a fixed wing aircraft in World War II.

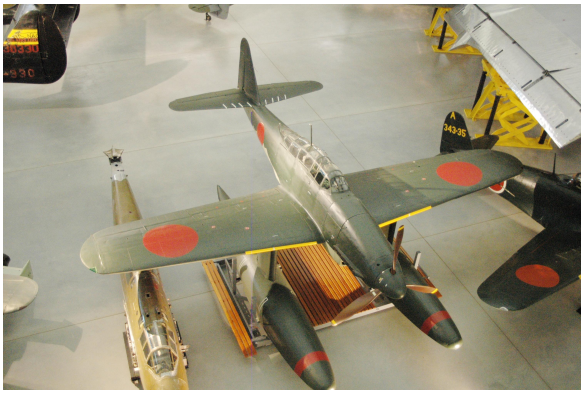


A painting, artist unknown, showing the launch of a Glen from the I-25.

The second Japanese catapult equipped submarines were the three I-400 class vessels, huge 400 foot long behemoths which could carry three Aichi M6A Seiran aircraft. The Seiran was had a forty foot wingspan but could be so "folded' that its diameter was reduced to that of its propeller! She could be launched form a 120 foot catapult on the foredeck of the submarine and a crack crew could get all three aircraft airborne within 45 minutes of surfacing. The submarines had an enormous range and plans were made to use them to bombard Washington and New York and the Panama Canal but none of the raids were ever attempted.



Imperial Japanese Navy photo of the I-401with its hangar door open.



The last surviving Aichi M6A1 Seiran aircraft is at the Udvar-Hazy Annex of the National Air and Space Museum.

The best of the British designs were the M class. Originally designed as submarine cruisers with 12 inch guns! The gun was removed from M2 and a hydraulic catapult fitted for a Parnall Peto seaplane. The ship and aircraft were envisioned as scouts for the main battle fleet. M2 sank in an accident while attempting to launch the aircraft and the Royal Navy abandoned attempts to employ submarine aircraft carriers.

M2 preparing to deploy its aircraft. *(RN Photo)*

The French submarine cruiser *Surcouf* deserves mention. She was the largest submarine in the world when launched and carried twin 8 inch guns and a hangar containing a Besson MB.411 floatplane.

The *Surcouf*'s aircraft was intended to spot the hits of its guns which could reach out to a range of over 10 miles, far beyond the vision of the ship from the surface.

The Sucouf displaying its twin 8 inch guns and Besson MB.411 aircraft.

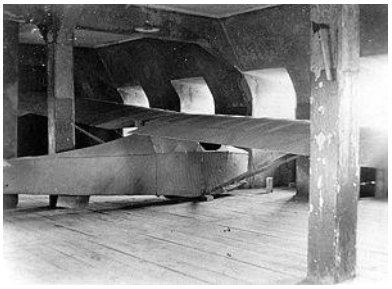
Her career was chequered. Originally with the French navy, when France fell, she escaped to Plymouth, England and was impounded by the Royal Navy after French resistance which resulted in three British and one Frenchman killed. Most of the crew chose repatriation to Vichy France but were killed when the British hospital ship carrying them home was torpedoed by the Germans.

The *Surcouf* was refitted and turned over to the Free French Navy but there was some suspicion that the crew has Vichyite tendencies and British liaison officers were put on board. During this time, she escorted convoys to Canada, was refitted again in New Hampshire's Portsmouth Naval Shipyard and visited New London, Connecticut. A month later, she, in consort with Free French corvettes, liberated Saint-Pierre and Miquelon, two islands just off the Canadian coast which had been under the control of Vichy.

In the winter of 1942, *Surcouf* was bound for the Pacific when she was sunk in the Caribbean after a collision with the freighter *Thompson Lykes.* A controversy arose over what really happened and as a result, conspiracy theories abound about the final fate of the *Surcouf.*

An audaciously conceived catapult aircraft in World War II is the story of the Colditz Cock. Colditz Castle, formally known as Oflag-IV-C was a German prisoner of war camp reserved for high value prisoners and those allied officers who had made a career of escaping from other prison camps but failed to make what was known as a "home run" and were recaptured. At first glance, this seems like a good idea to the Wehrmacht: put all of your hard-core "escapers"in a specially guarded high security prison. On the other hand, what the Germans did was put the most highly motivated and determined escape artists in one location which allowed them to pool their talents.

Flts. Lt William Goldfinch and Jack Best found a book, *Aircraft Design* by C.H. Latimer-Needham in the prison library. Using data from the book, purloined tools and materials, they constructed a glider behind a false wall in an attic. Noted British glider pilot, Flt. Lt. Lorne Welch performed the stress analysis on the design and Maj Tony Rolt kept the many volunteers who worked on the project organized.



The only original picture of the Colditz glider (credit: Lee Carson)

The launch system was to be powered by a bathtub filled with rubble which would be dropped from the attic, a system akin to that used by the Wright Brothers at Huffman Prairie. The prisoners were liberated by American troops and the glider was never used. A full scale replica was constructed and successfully flown in 2000 at RAF Oldiham.

Bill Goldfinch and Jack Best at Oldiham in 2007 when the replica was flown. (credit: Ian Jones-The Telegraph)

After World War II ended, a British company outfitted one of their factory ships, *FF Balaena*, with a surplus catapult and operated a Supermarine Walrus to spot whales in the Antarctic.

The Cold War led to the development of the last iteration of zero length launchers (ZLL) for

manned aircraft. The Western and Soviet adversaries recognized that runways would be one of the first targets hit when the hostilities commenced. Both sides sensed the need to get fighter aircraft aloft independent of runways which could be taken out in a surprise attack.

Simple inclined ramps and very large rocket boosters provided the answer for both sides. Both the USAF and the Luftwaffe experimented with the Republic F-84F Thunderstreak, the North American F-100D Super Sabre, and the Lockheed F-104 Starfighter. The concern was to launch attack aircraft after a first-strike. Truck mounted ramps were developed for the Martin Matador cruise missile and these were adapted for the ZLL manned aircraft. Recovery was planned using an inflatable mat and tail hook but this was found unworkable.

F-100D and its booster rocket on the portable launch ramp. (USAF Photo)

The Super Sabre departs.The booster imparts about 135,000 lb of thrust for four seconds with an acceleration of about four gees.The combination of aircraft engine and booster got the aircraft up to about 250 mph at burnout. (USAF Photo)

Luftwaffe marked F-104 during tests. (Lockeed Photo)

The Soviet choice was the MiG-19 Farmer and they were more interested in using the ZLL to position point defense interceptors. Specially reinforced aircraft were developed and landings were attempted using drag chutes and tail hooks but like western tests, proved unsatisfactory.

Farmer poised for take-off.

The launching experiments were successful but given destroyed runways, the problem of recovering the aircraft remained unsolved. Logistical problems in deploying the equipment and changes in tactical and strategic doctrine brought an end to the experiments.

Zero length launchers are ubiquitous in the current military environment. Many of the anti-tank and anti-aircraft missiles are mounted on them and a swarm of drones depend upon them for launch. But the development of helicopters and powered lift aircraft have made them redundant in regard to manned fixed wing aircraft.